MEYERSON, G. H.

137 58 4-6803

Translation from. Referativnyy zhurnal, Metallurgiya. 1958. Nr 4-p 70 (USSR)

AUTHORS Meyerson, G.A. Pavlyuk, R.A.

TITLE A Contribution to the Problem of Investigations of the Conditions for Chemical Decomposition of Solids with Formation of a Hydrate Precipitate (K voprosu ob issledovaniyakh usloviy khimicheskogo razlozheniya i tverdykh veshchestv s obiazovaniyem gidratnogo osadka)

PERIODICAL Sb. nauchn. tr. Mosk. in-t tsvetn. met | zolota i VN!10 tsvetn. metallurgii, 1957. Nr 26, pp 200-211

ABSTRACT

The employment of air tight, heated steam mills to study the solution reaction of scheelite in HCl made it possible to eliminate the inhibiting effect of hydrate films and to attain an actual state of equilibrium with comparative speed. The significant value of the equilibrium constant K= [CaCl2]/[HCl] = appx 9 500 confirms that the high excess and high strength of HCl employed in industry is not justified by the equilibrium conditions and merely constitute a method of combatting inhibition of the reaction of the hydrate films that come into being Employment of a steam charge in the acid treatment of scheelite provides accounts.

A Contribution to the Problem (co	137-58-4-680 ont 1
	oarse scheelite with a small excess of ic
Card !/2	

MEYERSON, G. A.

"Vacuum Thermal Reduction of Oxides by Carbon."

paper presented at Second Symposium on the Application of Vacuum Metallurgy.

68959

15.2220

SOV/81-59-23-82944

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 23, p 344 (USSR)

AUTHORS:

Meyerson, G.A., Samsonov, G.V.

TITLE:

The Problem of the Conditions for Obtaining Boron Carbide

PERIODICAL:

V sb.: Bor. Tr. Konferentsii po khimii bora i yego soyedineniy. Moscow.

Goskhimizdat, 1958, pp 52 - 57

ABSTRACT:

An investigation of the conditions for obtaining high-quality $B_{ij}C$ has shown that an insignificant quantity of free carbon in $B_{ij}C$ is obtained at a temperature of 2,200°C (point of peritectic decomposition of $B_{ij}C$); the best industrial method is the production of $B_{ij}C$ in electrical resistance furnaces, especially in furnaces without core; the decrease in the content of bound carbon in $B_{ij}C$ increases the hardness and the abrasive properties of $B_{ij}C$; in the magnesium-thermal reduction of $B_{ij}O$ 3 at a temperature of O4,000°C complete binding of boron in O6 is obtained, producing a

finely-grained powder.

From the authors' summary

Card 1/1

V

\$/137/60/000/02/04/010

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No 2, p 92, # 2781

AUTHORS: Meyerson, G.A., Samsonov, G.V., Kotel'nikov, R.B., Voynova, M.S.,

Yevteyeva, I.P., Krasnenkova, S.D.

Some Properties of Alloys of High-Melting Transition Metal TITLE:

Borides

V sb.: Bor. Tr. Konferentsii po khimii bora i yego soyedineniy, Moscow, Goskhimizdat, 1958, pp 58 - 73 PERIODICAL:

TEXT: Information is given on the production technology and investigations into the phase composition and the structure of products of diffusional interaction between initial borides of the TiB-1CrB, TiB-W-B. TiB-W-B. heatresistance of alloys and the structure of cinder of various composition.

A.P.

Card 1/1

Behavior of basic admixtures in the acid treatment of scheelite concentrates. Isv. vys. ucheb. sav.; tsvet. met. no.2:112-116

[58]

1. Moskovskiy institut tevetnykh metallov i solota. Kafedra metallurgii redkikh metallov.

(Scheelite) (Ore dressing)

AUTHORS:

Meyerson, G. A., Samsonov, G. V., Kotel'nikov, R. B.,
Voynova, M. S., Yevteyeva, I. P., Krasnenkova, S. D.

TITLE:

Some Properties of Alloys of the Metals of the Transition
Group With High-Melting Borides (Nekotoryye svoystva splavov
boridov tugoplavkikh metallov perekhodnykh grupp)

PERIODICAL:

Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 4, pp. 898-903 (USSR)

ABSTRACT:

In the present paper investigations of the alloys with the
systems TiB2-CrB2, TiB2-W2B5 and ZrB2-CrB2 were carried out.
Finely powdered borides of TiB2, ZrB2, CrB2 and W2B5 were
produced by vacuum-technique methods. The alloys of the

produced by vacuum-technique methods. The alloys of the system TiB₂-CrB₂ have monophase structure in all intervals of the composition. The alloys of the systems TiB₂-W₂B₅ and ZrB₂-CrB₂ are biphase.

The alloys were investigated with respect to microhardness and it was found that the alloys of the system TiB₂-CrB₂ at 80 Mol% TiB₂ have a maximum microhardness of 4200 kg/mm². The curves of microhardness of the systems TiB₂-W₂B₅ and ZrB₂-CrB₂ have the characteristic shape of biphase alloys. With all systems also the metallographic and radiographic

Card 1/2

78-3-4-11/38 Some Properties of Alloys of the Metals of the Transition Group With High-Melting Borides

investigation was carried out. In the system TiB,-CrB, continuous series of solid solutions occur, and in the systems TiB₂-W₂B₅ and ZrB₂-CrB₂ the solubility is limited. The solubility of TiB₂ in W₂B₅ and of W₂B₅ in TiB₂ never exceeds 10 or 5 mol₂, respectively. The solubility of ZrB₂ in CrB₂ is about 2mol₂, of CrB₂ in ZrB₂ it is very small. There are 4 figures, 4 tables, and 18 references, 11 of which are Soviet.

ASSOCIATION: Moskovskiy institut tsvetnykh metallov i zolota im. M. I

Kalinina

(Moscow Institute for Non-Ferrous Metals and Gold imeni

M. I. Kalinin)

SUBMITTED:

June 25, 1957

Card 2/2

AUTHORS:

PERSONAL SERVICE SERVI

Meyerson, G. A., Islankina, A. F.

SOV/89-5-2-9/36

TITLE:

Metallic Thorium (Metallicheskiy toriy)

PERIODICAL:

Atomnaya energiya, 1958, Vol. 5, Nr 2, pp. 155-165 (USSR)

ABSTRACT:

A report is given on Soviet investigations dealing with the production of compact thorium by means of the powder-metallurgical method. The physico-chemical properties and the characteristics of the pressing of electrolytically- or calcium-reduced thorium powder are given. Calcium-reduced powder is less easily compressed than electrolytical thorium powder as it has a lower bulk weight and a higher content of oxide films.

The main factors which are decisive for the sintering process are dealt with theoretically. Experimentally the changing of the strength and plasticity of the compact thorium from electrolytically- or calcium-reduced produced powder, in dependence on the sintering process and time, is determined. Briquettes made from calcium-reduced powder without porosity change their shape considerably during sintering at temperatures of more than 1 150 -1 200°C. This is due to the high degree of volatilization of the

Card 1/4

Metallic Thorium

Card 2/4

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For the purpose of obtaining compact thorium metal from calciumreduced powder, the sintered briquettes must be pressed cold a second time, after which they are annealed. The following physical and mechanical properties of powdermetallurgical thorium were found:

	electrolytical thorium	calcium-reduced thorium
Structure of the lattice at 20°C Lattice spacing kX Actual density g/cm³ Melting temperature °C Electric conductivity \(\hat{R} \) .cm Specific electric resistance \(\hat{R} \) .cm	11 1 700 ∼5	cubic .07 .75 ± 20 . 10 ⁴
Thermal conductivity kcal/m.h.°C	37 (103 se	•

Metallic 1	Fhorium		SOV /89-5-2-9/36
		electrolytical thorium	calcium-reduced thorium
	Linear coefficient of		
	dilatation 0-100°C Linear coefficient of	11,3 ÷ 11,5	5 . 10 ⁻⁶
	dilatation 100-800°C	16,3 - 16,5	5 - 10-6
	Micro strength kg/mm ² Density of the compact	55-75	-
	metal g/cm ²	11,60	11,5
	Strength H _B kg/mm ²	50	70
	Tensile strength ob kg/mm ² Stretching strain	16,5	22
	limit og kg/mm2	8	4 7
	Specific elongation of &	35-43	13 17-23
	Specific narrowing w%	25_34	-
	Impact strength of kg.m/cm ²	1,35	1,14
Card 3/4	There are 11 figures, 2 table Soviet.	es, and 22 refere	nces, 8 of which are

21(1) AUTHORS: Meyerson, G. A., Sokolov, D. D., Mironov, N. F., Bogorad, N. M., Pakhomov, SOV/89-5-6-3/25 Ya. D., L'vovskiy, D. S., Ivanov, Ye. S., Shmelev, V. M. TITLE: Beryllium (Berilliy) PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 6, pp 624 - 630 (USSR) ABSTRACT: The production of beryllium in the USSR is carried out by the 1) Electrolysis of Na₂BeF₄ or of a mixture of 2BeO.5BeF₂ with barium fluoride. The beryllium obtained is not of high value either quantitatively or qualitatively. Electrolysis of a mixture of molten beryllium and sodium chlorides. By this method Be with the following impurities Fe 0.01 to 0.02 % Mn 0.001 % Cu 0.02 to 0.07 % Ni 0.02 to 0.05 % Si 0.01 % Card 1/5 Cr < 0.003 %

Beryllium

SOV/89-5-6-3/25

3) Reduction of beryllium fluoride with metallic magnesium. The purity of the beryllium produced in this manner is characterized by the following impurities:

Fe 0.08 to 0.10 % Al 0.02 to 0.03 % Mn 0.01 to 0.02 % Cu 0.003 to 0.005 % Si 0.01 to 0.03 % Ni 0.003 to 0.005 %

4) Vacuum distillation.

The beryllium produced in this manner is the purest of all and contains only the following impurities:

Fe 0.005 % Ni 0.003 % Cr 0.005 % Mn 0.002 % Al 0.003 % Cu 0.004 %

The production of metal-ceramic single parts is characterized by the following methods and parameters:

a) By Vacuum hard-pressing $(10^{-2} \text{ to } 10^{-3} \text{ torr})$ it is possible to produce large single parts or parts having a maximum density of 1.85 g/cm^3 and being of fine-grained structure as

Card 2/5

Beryllium

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多数的形式的运动的影响,但是这种主义的企业的企业,是是是一种企业的企业,但是是一种企业的企业,但是是一种企业的企业。 第一种企业的企业,是是一种企业的企业,是一种企业的企业,是一种企业的企业,是一种企业的企业,是一种企业的企业,是一种企业的企业,是一种企业的企业,是一种企业的

well as having mechanical properties that are equal in all directions. At 1120-1150° C the amount of pressure applied amounts to from 5C to 30 Fg/cm^2 .

- b) Hot-pressing in air requires increased pressure values of from 100 to 150 kg/cm 2 .
- c) For the production of single parts of great density and strength hot-pressing is carried out in metal press molds in
- air at from 550 to 600° C and at a pressure of 4-5 t/cm², d) Production of single parts with a density of from 1.75 to 1.82 g/cm³: Beryllium powder is pressed with 10-15 t/cm² pressure, annealed in a vacuum at $1180-1200^{\circ}$ C, and is then subjected to subsequent treatment at normal temperature and

a pressure of 10-15 t/cm^2 or at 500-550° C and at a pressure of 8-10 t/cm^2 .

The properties of beryllium vary within a large domain in dependence on purity and structure (according to B. A. Sidorov and M. I. Stepanov, collaborators at the laboratory of N. N. Davidenkov). The results obtained by means of mechanical

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Beryllium

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investigations show that the latter depend to a considerable extent on processing and on the condition of the surface. Beryllium parts are easy to grind. The refractoriness of beryllium in air is very high. After annealing for several hundred hours at 500° C it does not decay. At 1000° C, however, the surface begins to be covered with a thick and soft oxide layer already after one hour. The stability of beryllium with respect to water is quite satisfactory. Technical beryllium contains various inclusions also after the first vacuum-casting, which, above all, cause the leakage of gas. In order to avoid this it is advisable to combine vacuum-casting with simultaneous centrifuging (Ye. S. Ivanov, Y. M. Shmelev).

THE STATE OF THE PROPERTY OF T

A crucible of beryllium oxide is evacuated up to 1.10⁻⁴ torr after having been filled with pieces of beryllium and closed by means of a beryllium-oxide stopper. The crucible is heated to a temperature of 800-900° C. The furnace is filled now with argon (30-50 torr) and the metal is heated to a temperature of 1450-1470°. The crucible is kept at this temperature for five minutes, after which its contents is emptied into a rotating graphite mold. The single beryllium parts produced in this

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Beryllium

SOV/89-5-6-3/25

manner attain a density of from 1.82 to 1.84 g/cm³, which indicates that only very few inclusions exist in the cast individual parts. There are 5 figures, 1 table, and 4 references, 1 of which is Soviet.

SUBMITTED:

August 19, 1958

Card 5/5

HATTER THE RESIDENCE AND THE PERSON AND THE PERSON AND 69391 18 6100 SOV/137-59-4-8001 Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 4, p 92 (USSR) Meyerson, G.A., Samsonov, G.V., Kotel nikov, R.B., Voynova, M.S., AUTHORS: Yevteyeva, I.P., Krasnenkova, S.D. - CrB, TiB₂ - WB and ZrB - CrB₂ Some Properties of Alloys in TiB TITLE: Systems Sb. nauchn, tr. Nauchno-tekhn, o-va tsvetn, metallurgii, Mosk, in-t tsvetn. met. i zolota, 1958, Nr 29, pp 323 - 338 PERIODICAL: Detailed information is given on results and methods of the experimental investigation into TiB₂ - CrB, TiB₂ - W₂B₅, ZrB - CrB₂ systems. Initial Norides were prepared by the vacuum-thermal method, and the alloys (over ABSTRACT: 5 - 10 mol %) were obtained by hot-pressed sintering of boride powder mixtures. After hot pressing all the specimens were annealed at 2,000 -2,100°C for 3 - 4 hours. The authors carried out metallographic, durometric and roentgeno-structural investigations; the thermal coefficient of linear expansion 9 was determined, as well as oxidation kinetics at 1,000 °C, and the depth of corrosion; strength characteristics (0 b, Ob compr.) of plain borides were also determined at room temperatures. Card 1/2

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SOV/137-59-4-8001

Some Properties of Allcys in TiB_2 - CrB, TiB_2 - W_2B_5 and ZrB - CrB_2 Systems

The results obtained are used to the conclusion that continuous series of solid solutions exist in the TiB2 - CrB2 system; and that solid solutions of limited solubility are present in the TiB2-W2B5 and ZrB2-CrB2 systems. The authors discuss in detail results of oxidation kinetics; decrease in overweight and in corrosion depth was observed in boride alloys, as compared to plain borides. Heat resistance of borides is higher than that of carbides, but lower than that of Mo silicide. The authors advance the hypothesis that in boride oxidation "self-healing" of the cinder takes place by the filling-up of defects with oxidation products (MeO - B2O3). This is confirmed by investigations into the cinder structure on the prepared areas and oblique cuts. These investigations showed also that in the majority of cases multilayer cinder is being formed, containing in its internal layers lower oxides (TiO, ZrO, WO2).

R.A.

Card 2/2

sov/58-59-5-10618

SECTION OF THE PROPERTY OF THE

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, p 109 (USSR)

AUTHOR: Meyerson, G.A.

TITLE: On the Theory of Sintering

PERIODICAL: Sb. nauchn. tr. Nauchno-tekhn. o-vo tsvetn. metallurgii. Mosk. in-t

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tsvetn, met, 1 zolota, 1958, Nr 29, pp 291 - 314

ABSTRACT: This is a review article. The bibliography contains 29 titles.

Card 1/1

SOV/136-58-12-9/22

Ostroushko, Yu.I., Meyerson, G.A., Silina, G.F. and AUTHORS:

Shtrapenina, R.B.

Electrolytic Method of Producing Tantalum (Elektroliti-TITIE:

cheskiy sposob polucheniya tantala)

Tsvetnyye Metally, 1958, Nr 12, pp 38 - 44 (USSR) PERIODICAL:

ABSTRACT: Electrolysis of melts for tantalum production was first developed in 1929 (Ref 1). The method, which was adopted outside the USSR, depended on the decomposition of Ta205,

whose presence in the K2TaF7-KF(-KCl-NaF) melt eliminated

the anode effect. Electrolysis becomes progressively more advantageous than the sodium-thermic method as the scale of operations is increased, a further advantage being the increasing availability of the pentoxide. The work described had as its object the study of electrolysis conditions for a type of electrolyte (based on NaCl + KCl eutectic) not used in practice. Electrolysis was affected in a nickel crucible (cathode) (Figure 1) 100 mm in diameter, the bath depth being 180 mm. The sylindrical graphite anode, with a working surface of 546 cm2, was fixed centrally. The electrolyte was made by fusing the equi-molecular chlorides (calcined, chemically pure) mixture and the K2TaF7 (pure

Card1/3

Electrolytic Method of Producing Tantalum

SOV/136-58-12-9/22

dry) at 650 - 700 $^{\circ}$ C and then adding pure dry ${\rm Ta_2}{\rm O_5}$ (10-15% of the weight of the KaTaF, could dissolve) after the anode had been inserted and the direct current switched on. The influence on recovery and current efficiency of the K2TaF7 content (10-100%) of the electrolyte (Figure 2) and of temperature (610-720 °C) (Figure 3) were studied, as was the effect on electrolysis of anodic current density $(5-140 \text{ A/dm}^2).$ The influence of these factors on the size composition of the tantalum powder was studied as was the behaviour of impurities (Figure 4 shows the impurity contents of the bath as a function of time, Table 2 giving the corresponding information for the powder). found that a pure powder, suitable for producing malleable tantalum could be advantageously made by electrolysis (followed by the usual purification) from electrolytes containing 67-70% (NaCl + KCl), 25-30% K2TaF7 and 3-3.5% Ta₂0₅ which melts at 600 °C, is highly fluid and Card 2/3 relatively non-volatile at the electrolysis temperature

Electrolytic Method of Producing Tantalum

SOV/136-58-12-9/22

(about 700 °C) and has little effect on the nickel. A system for maintaining electrolyte quality over long working periods has been devised. The cell used provides for continuous operation with periodical removal of the 70 % Ta cathodic deposit. There are 5 figures, 2 tables and 12 references, 9 of which are English and 3 Soviet.

Card 3/3

MEYERSON, GA.

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75392 SOV/149-2-5-18/32

AUTHORS:

Shapiro, K. Ya., Meerson, G. A.

TITLE:

Study of Acid Processing of Wolframite Concentrates

NAMES OF THE PROPERTY OF THE P

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Tsvetnaya metallurgiya, 1959, Vol 2, Nr 5, pp 124-132 (USSR)

ABSTRACT:

Acid processing of wolframite is a difficult operation due to a high chemical stability of the ore and to a complicated elimination of iron and manganese from the final product. Moreover, the process is complicated and delayed by a protective film of tungstic acid which is formed on the unprocessed wolframite. However, the acid process is advantageous if carried out in a heated ball mill which knocks off the protective film. Tests were made to develop a suitable industrial method. A coarse concentrate containing 73.4% WO₂ was processed in hydrochloric acid in a porcelain laboratory ball mill at 100°. The results, depending on the concentration and quantity of acid, and on time, are shown in Figs. 1,2. The product of

Card 1/5

Study of Acid Processing of Wolframite Concentrates

75392 SOV/149-2-5-18/32

the reaction was separated from the balls, washed, and after decanting of iron and manganese chlorides, the tungstic acid was dissolved in ammonia, evaporated or neutralized to pH = 7.3. The operation was completed in 8 hrs using a 70% excess of HCl. A 110% excess permits a 6-hr operation. Besides tests with coarse wolframite, fine crushed ore concentrate was processed in reactors with stirrers but without balls. However, the results of processing in ball mills proved to be much superior: better yields in shorter processing time. Processing at temperatures higher than 1000 in hermetic mills is recommended: at 1500 the operation is completed in 4 hrs. plate lining and basalt balls are recommended for use in ball mills for high temperature and acid resistance. Polyogranosiloxane rubber is also mentioned as an acidresistant and mechanically strong material. It is further suggested to carry out the process in two stages. 93% of the ore undergoes the reaction during the first 2 to 3 hours, leaving a small residue, which can be accumulated and processed later at a considerable time

Card 2/5

Study of Acid Processing of . Wolframite Concentrates

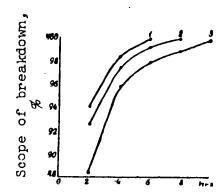


Fig. 1. Consumption of HCl vs speed and scope of wolframite breakdown (HCl concentration 34%). HCl consumption and ratio solid to liquid: (1) 210% and 1:1.6; (2) 170% and 1:1.3; (3) 130% and 1:1.

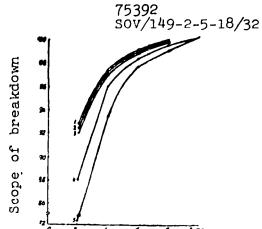


Fig. 2. Concentration of HCl vs speed and scope of wolframite breakdown (HCl consumption 170%). HCl concentration and ratio solid to liquid: (1) 34% and 1:1.3; (2) 30% and 1:1.46; (3) 26% and 1:1.7; (4) 22% and 1:2; (5) 18% and 1:2.46.

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001033720017-7"

Study of Acid Processing of Wolframite Concentrates

75392 SOV/149-2**-**5-18/32

These residues are no tailings; they contain about 10 to 12% WO3, even if it is only 0.5% of the total WO3. A two-stage processing permits a total 99.5% extraction of WO3. Usually the residues of 4 to 5 batches can be consolidated into one secondstage processing. Impurities and admixtures in the final product are eliminated by the following methods. A repeated washing of tungstic acid may still leave traces of iron and manganese which are entrained into the ammonia solution. It was found that the concentration of HCl during the initial process is of great importance for the final purity of the product, 26% concentration being the optimal. Even then the formation of sesquioxides of iron and manganese is possible, and they go into the solution together with ammonium tungstate. They can be eliminated by adding ammonium sulfide combined with a subsequent addition of lead nitrate which binds the excess sulfur in the insoluble lead sulfide. Excess lead is precipitated as lead tungstate. There are 6 tables; and 6 Soviet references.

card 4/5

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Study of Acid Processing of Wolframite Concentrates

75392 SOV/149-2-5-18/32

ASSOCIATION:

Krasnoyarsk Institute of Nonferrous Metallurgy, Chair of Rare Metal Metallurgy (Krasnoyarskiy institut tsvetnykh metallov. Kafedra metallurgii redkikh metal-

lov)

SUBMITTED:

March 9, 1959

Card 5/5

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MEYERSON, G.A.; SHAPIRO, K.Ya.

Studying conditions of equilibrium of reactions between synthetic ferberite and hydrochloric acid. Izv.vys.ucheb.

mav.; tavet.met. 2 no.6:142-146 '59.

1. Krasnovarskiy institut tsvetnykh metallov. Kafedra metallurgii redkikh metallov.

(Ferberite) (Hydrochloric acid)

sov/89-6-2-3/28 21(1), 11(6), 18(2) Meyerson, G. A. AUTHOR: Problems of the Metallurgy of Uranium and Construction Metals (Voprosy metallurgii urana i konstruktsionnykh metallov) TITLE: Atomnaya energiya, 1959, Vol 6, Nr 2, pp 129 - 134 (USSR) PERIODICAL: This paper gives a survey of a number of Western Geneva Reports. The following subjects are dealt with: ABSTRACT: 1) Uranium extraction: Geneva Reports Nr 179, 602, 1301, 2) Powder metallurgy of uranium: Geneva Reports Nr 44, 1097, 1252, 1260, 1399, 1433. 3) Casting of uranium cores: Geneva Reports Nr 27, 44, 541, 785, 4)Zirconium metallurgy: Geneva Report Nr 1033. 5) Niobium extraction: Geneva Reports Nr 10, 44, 305, 697, 1274, 6) Vanadium extraction: Geneva Reports Nr 44, 698, 1274. 7) Manufacture of beryllium tubes (sheathing material for feel elements): Geneva Reports Nr 318, 320. Card 1/2

Problems of the Metallurgy of Uranium and Construction CCV/89-6-2-3/26

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8)Zirconium hydride and zirconium, uranium and hydrogen alloys for homogeneous reactors: Geneva Report Nr 789.

SUBMITTED:

November 5, 1958

Card 2/2

CIA-RDP86-00513R001033720017-7 "APPROVED FOR RELEASE: 07/19/2001

18(2), 11(6), 21(1)

Meyerson, G. A. AUTHOR:

SOV/89-6-2-4/28

TITLE:

High-Melting Fuel Materials and High-Temperature Fuel Elements

(Tugoplavkiye toplivnyye materialy i vysokotemperaturnyye

teplovydelyayushchiye elementy)

PERIODICAL:

Atomnaya energiya, 1959, Vol 6, Nr 2, pp 135 - 139 (USSR)

ABSTRACT:

This paper gives a survey of the subject mentioned in the title, basing on the following Western Geneva Reports (1958). 1) Uranium oxide: Geneva Reports Mr 142, 182, 192, 193, 318,

784, 1165, 2368, 2380, 2404.

2) UO2 briquette fuel elements with a tubular Zircalloy-2

sheath: Geneva Report Nr 2380.

3) Fuel elements consisting of plate-shaped UO2 briquettes

with a Zircalloy-2 sheath: Geneva Report Nr 2380.

4) Fuel elements of the PWR reactor: Geneva Report Nr 787.

5) Uranium monocarbide and cermet uranium-monocarbide-uranium:

Geneva Reports Nr 318, 964, 1162, 1443.

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6) Fuel elements for a temperature of 1000 C consisting of

High-Melting Fuel Materials and High-Temperature Fuel 307/89-6-2-4/28 Elements

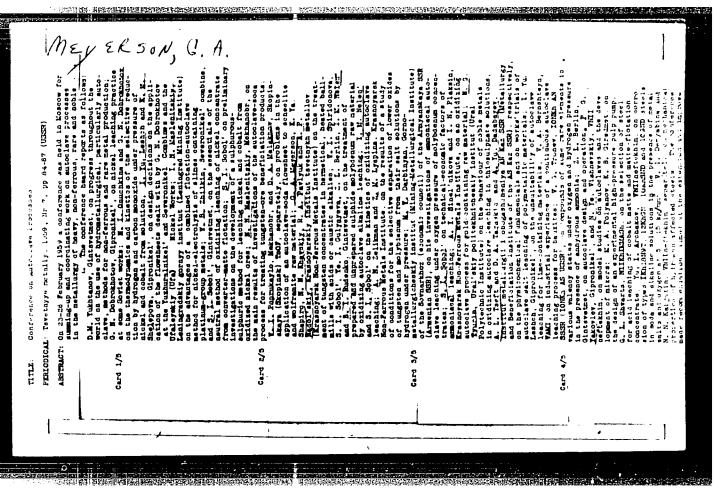
> thorium-uranium carbides with a graphite sheath for gascooled reactors: Geneva Reports Nr 314, 1005.

7) Fuel elements with a ThO_2-UO_2 mixture: Geneva Report Nr 314. 8) Metallic thorium fuel elements with a 3-7% U^{235} addition:

Geneva Reports Nr 706, 785, 541, 1705.

SUBMITTED: November 5, 1958

Card 2/2



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65043 69543 s/078/60/005/05/30/037 B004/B016

AUTHORS:

Meyerson, G. A., Kreyn, O. Ye.

运性制度的 **国际通用性制度的证明的现在分词 企业企业的现在分词**

Preparation of Hafnium Carbide

Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 5, pp. 1164 - 1167 TITLE:

TEXT: The authors deal with this problem because HfC might be of interest for reactor engineering, since it is a substance with a high melting point and a high neutron absorption coefficient. They treated pure HfO2 with lampblack at 0.2, 1, and 5 torr and temperatures of between 1,800 - 2,200°. Table 1 shows that compounds free from oxygen were obtained which, however, contained less C than corresponds to the formula HfC. A carbide forms with defective lattice and reduced period. In experiments with carbon excess (Table 2) a carbide with nearly stoichiometric ratio between Hf and C was obtained. Fig. 1 indicates that a low pressure of CO in the reaction wessel (of the order of some torr) supports the formation of complete HfC. The lattice constants of three samples with 4.61, 4.62, and 4.63 I were determined by X-ray analysis (Fig. 2). These values were in close agreement with the data available in publications. There are 2 figures,

Card 1/2

Preparation of Hafnium Carbide

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S/078/60/005/05/30/037 B004/B016

2 tables, and 9 references, 4 of which are Soviet.

SUBMITTED: July 1, 1959

Card 2/2

83122

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15.2200

AUTHORS:

Moyerson, G. A., Kreyn, O. Ye.

TITLE:

Study of the Conditions of Synthesizing Vanadium Carvid

Vacuum

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 9,

pp. 1924-1930

TEXT: It has already been found (Ref. 6) that in reducing V_2^{0} 0, with carbon at atmospheric pressure the amount of carbon bound in VC did not reach the theoretical value of 19.05%, and that below 2300°C also in the absence of oxygen there were still vacancies in the carbide lattice (Table 1). The present investigation deals with the production of vanadium carbide at 0.1-10 torr and temperatures of 1500-1800 C by reduction of V₂O₃

(65.3% X) with carbon (carbon black) in a vacuum furnace. To determine the temperature range in which carbide formation took place, the process and manometrically analyzed (Fig. 1). In the substitution of oxygen by carbon, however, part of the sites occupied by oxygen remain vacant. At 1900 C and

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83122

Study of the Conditions of Synthesizing Vanadium S/078/60/005/009/C01/017 Carbide in Vacuum B015/B064

above, oxygen can be completely removed from the solid phase in vacuum, under the formation of a solid VC-V solution (Table 2). Three sample mixtures were made to determine the influence exerted by the amount of carbon on the carbide formation (Table 3). It was found that at 1500°C and 0.1-1.0 torr also in the presence of free carbon VC-V was formed, and not VC (Table 4). At 1500°-1800°C and 0.1-1.0 torr it is possible to obtain oxygen-free carbide with a maximum carbon content of 15.5% to 17.8% (instead of 19.05%). The experiments on the influence of temperature and pressure on the composition of the product (Table 5), the dependence of the amount of bound carbon on the reaction duration at 1700°C (Table 6), and the composition of vanadium carbide obtained from a mixture with increased carbon content (Table 7), show that at 1700°-1800°C and 1-1.0 torr the maximum saturation of vanadium carbide with carbon amounting to 17.6-17.8% is reached within two hours. M. A. Gurevich and B. F. Ormont are mentioned in the paper. There are 4 figures, 7 tables, and 8 references: 4 Coviet, 1 French, 2 Japanese, 1 US. and 1 Gorman.

SUBMITTED:

June 18, 1959

Card 2/2

いっつロエ

S/089/60/009/005/004/020 B006/B070

21,1330

AUTHORS:

Meyerson, G. A., Kotelinikov R. B., Bashlykov S. N.

TITLE:

Uranium Carbide V

PERIODICAL:

Atomnaya energiya, 1960, Vol. 9, No. 5, pp. 387 391

TEXT: The present paper gives results of investigations of the effect of the conditions of UC preparation on its composition. UC is of interest as a possible nuclear fuel or as a material for nuclear thermolelectric transducers. The object of the investigations was the establish the optimum conditions for the preparation of statchiometric UC. The UC powder was prepared from a mixture of uranium dioxide and carbon black according to the equation: $UO_2 + 3C \rightarrow UC + 2CO$. The mixture was placed

in beryllium exide crucibles, and/sintered under different conditions in a vacuum furnace with graphite heating elements. The UC briquets obtained were then ground into powder with grain sizes of less than 10-15 μ . The density of the UC powder was 12.97 \pm 0.09 g/cm³. Table gives a collection of data on the effect of reduction conditions on the

Card 1/6

Uranium Carbide

3/089/60/009/005/004/026 **B**006/**B**070

composition of UC. For hot extrusion of UC specimens, the graphite ex trusion die was placed in a hermetically sealed metal vacuum chamber $(\sim 10 \text{ mm Hg})$, and the effects of extrusion pressure, temperature, and holding time on the density of the specimen were studied. The graphite die was lined with molybdenum foil to prevent carbonizing of UC to UCo Temperatures above 1850°C caused a lowering of the density of UC. The porosity of specimens of square cross section and with a length to diameter ratio equal to one was about 5%. Briquets made of UC powder or of a UC + U mixture with different U contents (9.5 - 3.8% by weight) were also sintered in graphite crucibles placed in a vacuum furnace with graphite heating elements. After sintering for two hours at 2200°C the porosity of UC was found to be 10%. The introduction of metallic uranium increased the density considerably. With a uranium content of 25% by volume (31.8% by weight) and two hour sintering at 1700°C it is possible to obtain a compound with a porosity of 5% or less. The thermal conductivity of UC between 100 and 700°C varied from 0.028 to 0.04 cal/cm.sec.deg The mean thermal coefficient of linear expansion in the range 20 1500°C was 11.6 10 6. The microhardness of the UC phase

Card 2/6

85561

Uranium Carbide

S/089/60/009/005/004/020 B006/B070

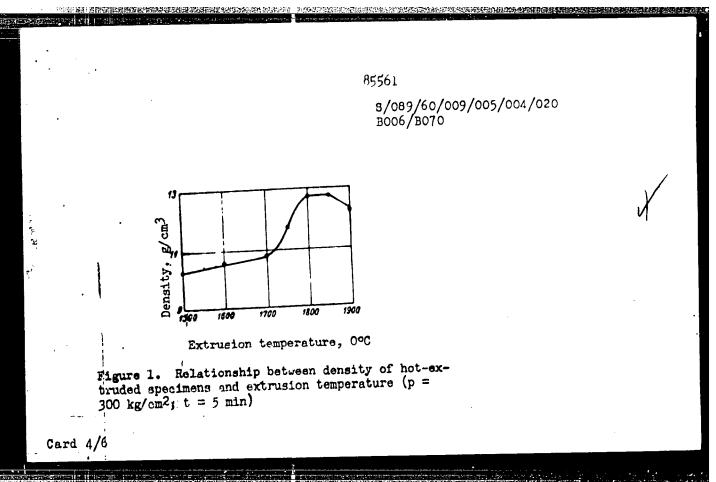
was 923 ± 56 kg/mm². UC specimens and UC + 20wt% U were subjected to isothermal heat treatment (200-1000°C), and the change of their properties was studied. Pure UC with a porosity of ~15% could withstand 500 cycles without fracture and UC+U specimens - more than 1000 cycles. There are 8 figures, 3 tables, and 7 references: 3 Soviet, 1 British, 2 US, and 1 Austrian.

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SUBMITTED:

March 4, 1960

Card 3/6



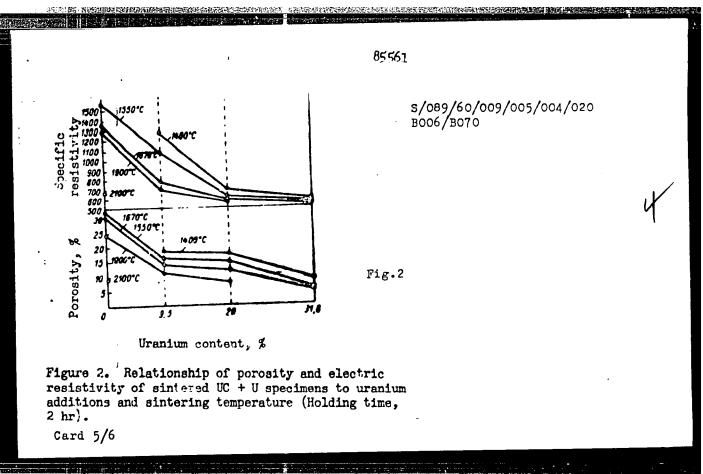


Table 1					85561 s/089/60/009/005/004/020 8006/8070						
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char 4) E 6) U	ge in % Holding I conter	% of the time at nt [wt%]	stoichic maximum 7) Con	per of exponetric a temperate tent of Control of Contro	mount. ure im	3) Ma: in]. 5 8) Co:	ximum 1) Resid ntent d	empera lual pr of C fre	ture [(m).	

"APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001033720017-7 图1900年[16]中国发展的排除**证据的图377的分别。在**2014年15日的图35年16日的 2,4 5/136/60/000/02/013/022 E111/E435 Meyerson G.A. Shapiri K.Ya. and Knomyakov F.F. New Method for Producing Chemically Pure Tungstic Acid 5.2250 1960 Nr 2 Pt 58-63 (DSSR) AUTHORS: The authors have leveloped under latoratory conditions. TITLE. Tavelnive metally a new improved method of preparing pure tungstic acid PERIODICAL used in spectrical engineering, on the basis of a Proposal by & Ya shepire and A. Luckavia (Aschor)a ABSTRACT: Certificate Se 1200to 1358) for using the double said ammentum sodium jaraturastate corresponding approximately insteal of all rum temperates from technical andrum 10 3184, 126 Nage, 10 405 15H20 tungstate sold ion with the aid of ammon, im chloride and its use simplifies subsequent operations. The present investigation was on the influence of pii, concentration of initial sodium tungstate solution and car as of ammonium chioride on the crystallization and vield or the double salt The Lebeviour of sodium and marybd-num as impurities at various stages in the process are also studied Chemically pure sodium tongstate was used, the pH of the solution before addition of anhydrous ammonium card 1/4

S/136/60/000/02/013/022 E111/E435

New Method for Producing Chemically Pure Tungstic Acid

chloride being adjusted by adding hydrochloric acid. pH values were determined with the aid of an LP-5 After crystallization, the double salt was separated and washed and its WO3 content determined. The double salt was decomposed with hydrochloric acid to give chemically pure tungstic acid. Table 1 shows WO3 yield, %, for pH values (of the Na2WO4 solution) of 6.0, 7.3 and 8.0 and different values of NH4Cl excess (% of that required to form $(NH_4)_2WO_4$) and molar ratio of NH_4 , Na in the solution. The yield rises with increasing excess of NH₄Cl and is a maximum (90%) at 120% and pH = 6.8 to 7.2. The influence of time and NH4Cl consumption on the yield is shown diagrammatically indicating that the rate of increase of yield falls off sharply after the first 48 hours. Table 2 gives the yield for various crystallization times and Na₂WO₄ solution concentrations of 100, 170 -240 and 280 g WOy/litre: maximum yields are obtained at concentrations of 170 to 240 g/litre. On the whole it is not advisable to aim for yields of over 90% since

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New Method for Producing Chemically Pure Tungstic Acid

contamination of the double salt then occurs. Chemical analysis of the double salt obtained under optimum conditions showed its composition to be Table 3 shows the Mo:WO3 ratio and the degree of purification from molybdenum during the crystallization of the dcuble salt and its decomposition by hydrochloric acid showing that. by treating by the proposed method mulybdenum concentrates with 0.10 to 0.13% Mo relative to W03 a product with Mo:WO3 (0.02% (ie satisfying the GOST) can be produced. The chemical compositions of two samples are compared in Table 4 with the specifications of GOST 2197-43 showing that all impurities are well below the specification. The new technology eliminates many of the operations applied in the current method. which uses calcium tungstate as an intermediate froduct, and brings about an almost complete separation of impurities The authors recommend the semi-production testing of their method and its industrial adoption.

Card 3/4

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S/136/60/000/02/013/022 E111/E435

New Method for Producing Chemically Pure Tungstic Acid

There are 1 figure, 4 tables and 5 references, 3 of which are Soviet, 1 English and 1 French.

ASSOCIATION: Institut tsvetnykh metallov im. M.I.Kalinina (Institute of Non-Ferrous Metals imeni M.I.Kalinin)

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AND THE PROPERTY OF THE PROPER

S/137/62/000/005/028/150 A006/A101

AUTHORS: Meyerson, G. A., Khavskiy, N. N., Shapiro, K. Ya., Nadol'skiy, A. P.

TITLE: Investigations of processing tungsten concentrates

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 16 - 17, abstract 50101 ("Sb. nauchn. tr. In-t tsvetn. met. im. M. I. Kalinina", 1960,

v. 33, 161 - 174)

TEXT: The authors studied thermodynamical, equilibrium and kinetic fundamentals of acid processing of tungsten concentrates. The high values of equilibrium constants in the interaction reactions of scheelite (about 10,000) and tungstenite (about 700) with HCl prove the thermodynamical possibility of the practically full decomposition of these concentrates at a slight excess of HCl. The authors studied conditions of acid and alkaline decomposition of the concentrates in heated ball mills. Two-stage processes of acid and alkaline decomposition of concentrates ensuring a 99.5% stripping degree within 2 - 4 hours, were developed under industrial conditions. The behavior of main admixtures (Mo, P and As) was studied at individual stages of acid and alkaline processing of

Card 1/2

Investigations of processing tungsten concentrates

S/137/62/000/005/028/150 A006/A101

tungsten concentrates. An economical method was developed of producing chemically pure WO3 and H2WO4 from standard solutions of commercial Na2WO4 with the use of $3(NH_{4})_{2}0\cdot Na_{2}0\cdot 10WO_{3}$ as a semiproduct.

G. Svodtseva

[Abstracter's note: Complete translation]

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Card 2/2

s/137/62/000/005/026/150 A006/A101

Meyerson, G. A., Zelikman, A. N., Belyayevskaya, L. V., Tseytina, AUTHORS:

N. Ya. Kirmova, G. F.

Processing of titanium-niobium rare-earth complex raw material by TITLE:

carbidization and chlorination

Referativnyy zhurmal, Metallurgiya, no. 5, 1962, 13, abstract 5080 PERIODICAL:

("Sb. nauchn. tr. In-t tsvetn. met. im. M. I. Kalinina", 1960,

v. 33, 175-185)

The processing of Ti-Nb raw material by the method of carbidization and chlorination was conducted on a laboratory and enlarged scale. The method consists in heating a mixture of the concentrate with coal in an electric furnace at 1,800 - 1,900°C. The complex raw material elements are then transformed into carbides and divided into the following two groups according to their properties: 1) TiC, NbC, TaC, SiC - strong refractory compounds, and 2) carbides of rare earth elements Ca, Na, Al and Fe, dissolving in diluted acids. Processing of a carbidization product with 10% HCl makes it possible to separate all soluble elements from refractory carbides. The washed and dried residue (solid solution

Card 1/2

Processing of titanium-niobium ...

S/137/62/000/005/026/150 A006/A101

of Ti, Ni, Ta carbides) is chlorinated at $800\,^{\circ}\text{C}$ with subsequent separation of chlorides in condensers and cleaning by rectification. Results of investigations are presented.

G. Svodtseva

[Abstracter's note: Complete translation]

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Card 2/2

85457 3/149/60,000,005/009/015 A006 /A001 2308, 1142, 1411, 1439 17.4311 Meyerson G.A. Zelikman, A.N. B-Lyavakaya L.V. Teeyina N.Ya 152200 AUTHORS Kirilliva, G.F. anium-Nitrium Carride Tri rina-Investigation Into Confidence of Th TITLE 1100 Izvestiya vysariko whechyko zaveleniy Tavethaya meda, lungiya, FERIODICAL . 1960 No 5 :: 108 115 The authors investigated kinesise of a Truex titanium niccium carcore retrination and studied the process of our rination in a fluidized sed on a large scale lateratory furnace. The former lovestigation was made with not present (/.indrical specimens of titarium finitum carcine, containing in # 16 88 Ti 13.91 No. 2.62 Si 8 79 Ti And 12 32 Ofree 3.76 N. 11 72 O etc. Tomplex carbide was obtained from the additional column concentrate and represented an pxy artonimide. Chiorination kinetics of the expanded was investigated using an rizontal quartz tuce at 800, 600 and 40000 and 9 1 min inverse feed. It was furl that contribation of compact carride acetures was accompanied by the formation of an external graphite lay-r. At 400000 the effect of this layer on the Cart 1 6

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Investigation Into Conditions of Totarium No tour Carbide Chlorination

or limination rate was not noticeable (the process caving a kinetic hat are 6CC and in particular, at 800°C, sime diffusion innitition of the reaction was inserved due to the graphice ayer former. The nature of the bicronation process becomes intermediate between kinetic and diffusion one, the former reing prevalent. The dependence of the million in the duration of the priless was revealed and used ': carcilate the maximum plastice duration of or principle of varities size parcife partities at 400 600 and 800°C (Table 1)

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s/149/60/000/005/009/015 A006/A001

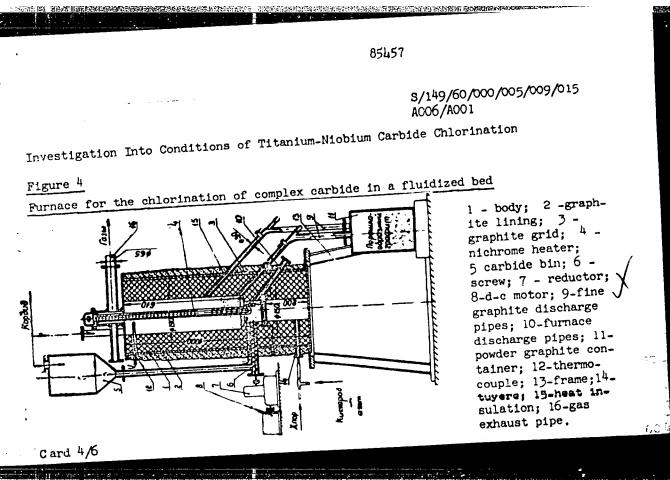
Investigation Into Conditions of Titanium-Niobium Carbide Chlorination

 $\frac{\text{Table 1}}{\text{Maximum}}$ possible duration of carbide particle chlorination

Maximum possible	duration of carbias p	Duration of chl	orination, min
Temperature °C	Particle size	in the presence of a graphite layer	graphite layer
		8,0	5,58 X
800 800 800 600 600	0,250 0,075 0,042 0,250 0,075 0,042	2,8 1,2 17 5 3	1,68 0,94 13,6 4,1 2,3
600			- Harre 4

Chlorination in a fluidized bed was studied on a furnace shown in Figure 4.

Card 3/6



85459

S/1-9/60/300/005/011/015 A000/A001

Radiographic Investigation of Recrystallization Processes and Release of a Carbide Phase of Hard Alloys Containing Tungsten, Titanium and Tantalum Carbides

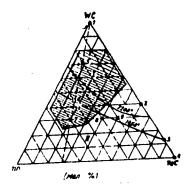


Figure 1

Phase diagram of the WC-TiC-TaC system; solubility of WC at 1,450 and 2,200°C are shown; the biphase range I contains a solid solution of TiC-TaC-WC and WC carbide; the mono-phase range II contains the TiC-TaC-WC phase; points 1 - 9 are the carbide components of the alloys investigated.



Card 5/6

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85459

Radiographic Investigation of Recrystallization Processes and Release of a Carbide Phase of Hard Alloys Containing Tungsten, Titanium and Tantalum Carbides

There are 3 figures and 4 Soviet references.

Moskovskiy institut stali (Moscow Steel Institute) Kafedra ASSOCIATION:

fiziki metallov i rentgenografii (Department of Physics of Metals

and of Radiography)

"HIBMITTED:

October 27, 1959

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S/180/61/000/003/003/012 E021/E135

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Meyerson, G.A., and Vitan'i, I.V., (Moscow)

的时间。 1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1985年,1

AUTHORS :

The intensification of contraction during sintering

TITLE: of powders

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.3, pp. 42-49

In investigations aimed at increasing the density, simple binary molybdenum-nickel alloys were used to determine the influence of the characteristics and methods of preparation of the initial powders on the properties of sintered alloys. Three alloys were tested: 17% Mo and 83% Ni which is a solid solution; 28.5% Mo and 71.5% Ni corresponding to the β phase Ni4Mo; 50% Mo and 50% Ni corresponding to a mixture of \gamma and \do phases (NizMo and NiMo). Two methods of preparation were used: .a mixture of nickel and molybdenum powders, or powdered alloy obtained by reduction of a mixture of nickel and molybdenum oxides. results of particle-size measurements are given in Fig.1, where the percentage of the powder corresponding to different fractions (in microns) is given (curve 1 - Ni, curve 2 - Mo, curve 3 - Ni-17% Mo, card 1/7

22975

5/180/61/000/003/003/012

The intensification of contraction ... E021/E135 curve 4 - Ni-28.5% Mo, curve 5 - Ni-50% Mo). Table 2 gives the porosity (n, %) and density (o) after pressing for the different alloys, as a function of the type of charge and the pressing After pressing, the samples were sintered in nickel boats in a tube furnace using a pure dry hydrogen atmosphere. Sintering of alloys containing 17 and 28.5% Mo was carried out at 1250 °C, and alloys containing 50% Mo at 1190 °C. The influence of the sintering time (T, hours) on the density (ρ , g/cm^3) of the alloys is shown in Fig. 2. Curves 1 relate to powdered alloy, and curves 2 relate to mechanical mixtures of the metal powders. The top two curves are for Ni-17% Mo, the next four curves for Ni-28.5% Mo, and the bottom four curves for Ni-50% Mo. continuous lines refer to sintering after pressing at 4 t/cm2, and the discontinuous lines after pressing at 2 t/cm2. that the most intensive densification is obtained from the powdered alloys. This is especially marked in the alloys containing Fig. 3 s.ows the effect of sintering time (T, hours) on the relative porosity (vnop/v nop) of Ni-50% Mo alloys (curve 1 - mixture of powders, curve 2 - powdered alloy). Microstructures of Ni-28.5% Mo from a mixture of powders, card 2/7

22975

S/180/61/000/003/003/012 E021/E135

The intensification of contraction ... Ni-28.5% Mo from powdered alloy, and Ni-50% Mo from powdered alloy after 4 hours sintering (x 400) are reproduced in the paper. microstructure of the Ni-28.5% Mo alloy prepared from powdered alloy is more dense than that from a mixture of powders. The alloy containing 50% Mo is more dense and has a finer grain structure. Strength and electrical resistance measurements were also carried out. The change in both properties with sintering time was very that the powdered alloy containing 17% Ho was a face centred cubic lattice with a = 3.547 & corresponding to a solid solution of Mo in Ni. The powdered alloy containing 28.5% Mo showed lines of a tetragonal lattice corresponding to N14Mo, but the presence of other lines showed that it was not a single phase. The powdered alloy containing 50% Mo did not show sharp lines corresponding to any phase, which shows the extremely fine crystal structure of the particles of powder. It is possible that both the 28.5% and 50% No alloys had other phases present because of incompleteness of the diffusion processes. This metastable character of the structure could be one reason why the alloys had such high activity during sintering. Card 3/7

22975 8/180/61/000/003/003/012

The intensification of contraction ... There are 5 figures, 5 tables and 6 references: 1 Soviet, 2 German and 3 English. The English language references read as

Ref.2: F. Kelley. Powder metallurgy. Electr. Engng., 1942, v. 61, 468.

Ref. 3: P. Duwez, H. Martens. Nickel-iron-molybdenum alloys. Metals Technology, 1948, v. 15, 4, 156.

Ref. 4: C. Goetzel. Treatise on powder metallurgy, p. 632, New York,

SUBMITTED: October 27, 1960

Card 4/7

15.2410

28875 S/180/61/000/004/013/020 E071/E180

AUTHORS:

Meyerson, G.A., Dergunova, V.S., Epel'baum, V.A.,

(Moscow) and Gurevich, M.A.

TITLE:

An investigation of some hard alloys of the

Boron-Silicon-Carbon system

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo.

no. 4, 1961,

The above system has, as yet, been insufficiently For this reason the authors investigated three groups of alloys of the following types: alloys close to the zone of solid solutions based on SiC, alloys based on B4C, and alloys of the central part of the ternary B-Si-C system. In the latter, the points were chosen so as to overlap the zones in which previous investigators assumed the possibility of the existence of a ternary compound of the type BxSiyCz. Specimens of the alloys were obtained by hot pressing powder mixtures of the elements at 2000-2100 °C (no details of the preparation are given). Spectral

Card 1/4

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An investigation of some hard alloys.... E071/E180

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analysis of the specimens indicated that the sum of admixtures (Fe, Mg, Al, Ca) did not exceed 0.1%. Porosity did not exceed 2-5%, and density was uniform throughout the whole volume of the A prolonged high temperature annealing (50-100° below pressing temperature) brought the alloys to the equilibrium state with an increase in the grain size, but did not cause any changes in the chemical composition, or any increase in the porosity. The specimens were submitted to metallographic and X-ray analysis and microhardness measurements. The following conclusions are drawn: 1) A phase exists in the B-Si-C system with a melting temperature above 2100 °C and a very high hardness (about 7000 kg/mm² and above), noticeably exceeding the microhardness of boron carbide (5000 kg/mm²). 2) In specimens produced and treated in the described way, metallographic and X-ray analysis did not show the presence of any new phases in noticeable quantities, only solid solutions based on B4C, SiC and Si (the latter at an insufficient carbon content). The X-ray analysis indicated that the solubility of silicon (or siliconcerbide) is small in boron carbide (less than 2% if calculated on Si), but metallographic investigation suggested Card 2/4

\$/180/61/000/004/013/020

An investigation of some hard alloys. E071/E180

the presence of an apparently single phase up to 10-12% silicom. This can be explained by the separation of submicroscopically dispersed SiC particles on cooling. The microhardness of such grains, based on B4C, is 7000 kg/mm² and, in some cases reaches 3) Grains of solid solutions based on SiC have a microhardness of 5000-5200 kg/mm2 instead of the 3500 of pure SiC. 4) The hardness of B-Si-C alloys changed little up to a temperature of 700-800 °C. For alloys based on B4C, the hardness of 6000-7000 kg/mm² at 20° dropped to 3000 kg/mm² at 800-900 °C and, for alloys based on SiC, from 4000-5000 kg/mm² to 1500 kg/mm². During these measurements, the formation of cracks was observed around the indentation in a number of cases, indicating that the actual hardness values could be higher. The work was carried out in the Kafedra redkikh metallov i poroshkovoy metallurgii (Department of Rare Metals and Powder Metallurgy) of the Institut tsvetnykh metallov imeni M. I. Kalinina (Institute of Non-ferrous Metals imeni M.I. Kalinin), in cooperation with the Fiziko-Khimicheskiy institut imeni L.Ya. Karpova (Physico-Chemical Institute imeni L.Ya. Karpov).

Card 3/4

28875
S/180/61/000/004/013/020
An investigation of some hard alloys ... E071/E180
There are 1 figure, 1 table and 4 references: 3 Soviet-bloc and 1 English. The English language reference reads as follows:
Ref.1: F. Ton. The quest for hard materials. Industrial and Engineering Chemistry. Industrial edition, 1938, 30.
232-242.
SUBMITTED: November 21, 1960

Card 4/4

Heterogenous hyprocess. Isv.A	N SSSR.Otd.tekn.nauk.me		in the communition topl. no.5:36-42 3-0 (MIRA 14:10)		
(Hydrometallurgy)					

\$/598/61/000/005/007/010 \$640/0113

ATTITIO: Waysasun, J.L., Skillman, A.N., Belyayevs'taya, L.V., Trayslau, N.Ya., and Histolova, J.P.

TITLE: Investigation of the obloation processes of titanium and riobium carbile, and rome there exists and come the carbile.

ormod: Anthoniy we hoodd. The slott metallargia. Thom is reposed Lavy, no. 3, Muscow, 1961. Metallarglya i Mhumiya tit ma, a feli

Tivi: The authory studied the reactions of titanium carbides and nitrides, tip iam, complex N-Nb sarbide, TiO and silicon carbide with chloring in shloringtion for obtaining TiOl.. The experiments were subdusted in view of the adventageous trained into its pertion of titanium combide and titanium carbides, the possible factors use of the boiling layer for ablusing layer for ablusing them, and because recombination of rutile and ilmenite in used in foreign titanium production practice. Generalized results of the studies are given and a detailed illustrated description of the experimental equipment pre-

Card 1/3

server in the fill of the contract of the first of the first order.

#/509/61/500/105/507/610 pc:60/b113

Investigation of the chloric tion processes ...

a model. Titudian combile, and the nium and mishimm niturated collaringt 1 featuret of all configurate, whereing the chloringty at 200°0. Interval relation of Mb combined with this collaringth is at the perceptible rate attacked from from clove (00°0. This range inc-700°0, the TiO at a perceptible rate attacked from 100°0. In the range inc-700°0, the TiO chloringtian legree was 50%, which is emploined by the roughlen

2710+271₂ → 7101₄+710₂.

In the presence of surban, TiO chlorinated much fruitor of the presence of surban, TiO chlorinated much fruitor of the problem. Tiventh as while was prepared with law, such michiga surface of the content of the face of the content with 110 kg/cm² and the same of the content with 110 kg/cm² and the the content with 110 kg/cm² and 1700-2750 of respectively. The face of the content of the content with 150-000 of and 0700-2750 of respectively. publication of these consenerate with subsequent washing in hydrochloris oid patient of topolitics and subsequent washing in hydrochloris oid patients.

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的主义。 isjaj staljantavić ca a i mitorija operinstia jenaraominast 33175 5/180/01/000/006/005/020 1.073/1535 15 2240 werson it. Kinarisov S S and Chien Shao Luan postmence of evelic temperature charges on the ciptering of titanium carbide Grademive nauk SSSR, Izvestiya Otdeleniye токhnicheskikh nauk Metallurgiya i toplivo المناهون والمناز والمار The authors studied some possibilities of intensifying nn 6 1961 52-55 the process of densification during sintering of titanium carbide by the muthod of thermal cycling and by approaching the fusion temperature as closely as possible. Contrary to earlier investiuntions, the holding times during thermal cycling were short ones, which are more suitable for practical requirements. The initial ritanium carbide powder contained: 78,8% Ti 18,4+ (tot. (0.3% C) 0.5% N. The particle size did not exceed 5 u the compressed briquettes had a density of 3 27 to 3 28 g/cm i,e the norosity was 33%. Sintering was in closed graphite cvlindrichi shells placed into a furnace with a hydrogen Card 1/4

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Specimens of

Influence of cyclic temperature ... S/180/61/000/006/005/020 E073/E535

the duration of the holding at the maximum temperature in the range 3 to 10 min did not affect the results; therefore, the following three heating conditions were applied: heating to the maximum temperatures of 2400, 2600 and 2800°C, holding at that temperature for 3 min, followed by cooling to 400°C, i.e. until the red brightness ceased, followed by re-heating. To increase the throughout rate, coolers were fitted on both sides of the furnace. Fig. I shows the change in density Q, g/cm of titanium carbide as a function of the holding time t, min and temperature during cyclic (continuous lines) and isothermal (dashed lines) sintering. Microphotographs revealed that an increase in density as a result of cyclic thermal sintering is also accompanied by an increase in the size of the titanium carbide grains and by

congulation and soheroidization of the pores. In a second series of experiments, the influence of the initial state of the surface of the powder particles was investigated. A part of the powder was washed with a mixture of hydrofluoric and nitric acids, the quantity of which was so chosen that about 2% of the total

quantity of titanium carbide became dissolved,

Card 2 🕯 🥇

33175

Influence of cyclic temperature ... S/180/61/000/006/005/020 E073/E535

cleaned and not cleaned titanium carbide were subjected to isothermal sintering at 2600°C and at 2900-2950°C. the change in the density ρ , g/cm^3 of cleaned (continuous line curves) and not cleaned specimens (dashed line curves) as a function of the holding time t, min at the sintering temperatures 2600°C (plot a) and 290 >-2950°C (plot 6). The cleaning and activation of the surface of the particles led to coarsening of the grain and to an acceleration of the settling. The minimum achieved porosity was about 4% for isothermal sintering at a temperature approaching the fusion temperature for 7 to 10 min. In practice such sintering conditions can be applied only in furnaces where the temperature is accurately and automatically concrolled within very narrow limits. There are 4 figures, 1 table and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The English-language reference reads as follows: Ref.4: Hausner H.S. Metals, 1952, 4, 1039.

SUBMITTED: April 26, 1961

Card 3/1 3

为这个学习是不完全的。 "这种人的是是不是是一种,我们就是一种人的,我们就是一种人的,我们就是一种人的,我们就是一种人的,我们就是一种人的,我们就是一种人的人的,我们就是一种人的人的

KNUNYANTS, I.L., glav. red.; BAKHAROVSKIY, G.Ya., zam. glav. red.; BUSEV, A.I., red.; VARSHAVSKIY, Ya.M., red.; GEL'PERIN, N.I., red.; DCLIN, P.I., red.; KIREYEV, V.A., red.; MEYERSCH. G.A., red.; MURIN, A.N., red; POGODIN, S.A., red.; REBINDER, P.A., red.; SLONIMSKIY, G.S., red.; STEPANENKO, B.N., red.; EPSHTEYN, D.A., red.; VASKEVICH, D.N., nauchnyy red.; GALLE, R.R., nauchnyy red.; GARKOVENKO, R.V., nauchnyy red.; GODIN, Z.I., nauchnyy red.; MOSTOVENKO, N.P., nauchnyy red.; LEHEDEVA, V.A., mladshiy red.; TRUKHANOVA, M.Ye., mladshiy red.; FILIPPOVA, K.V., mladshiy red.; ZHAHOVA, Ye.I., red.; KULIDZHANOVA, I.D., tekhn. red.

[Concise chemical encyclopedia] Kratkaia khimicheskaia entsiklopediia. Red. koll.: I.L.Knuniants i dr. Moskva, Gos. nauchn. izd-vo "Sovetskaia entsiklopediia." Vol.1. A - E. 1961. 1262 columns. (MIRA 15:2)

(Chemistry-Dictionaries)

TRET'YAKOV, Vsevolod Ivanovich. Prinimali uchastiye: CHAPOROVA, I.N., kand. tekhn. nauk; KOVAL'SKIY, A.Ye., kand. khim. nauk; BARANOV, A.I., inzh.; MEYERSON, G.A., prof., doktor tekhn. nauk, retsenzent; IVENSEN, V.A., kand. tekhn. nauk, retsenzent; BABICH, M.M., inzh., retsenzent; OL'KHOV, I.I., red.; MISHARINA, K.D., red. izd-va; DOBUZHINSKAYA, L.V., tekhn. red.

[Ceramic-metal hard alloys; physicochemical principles of their production, properties and fields of use] Metallokeramicheskie tverdye splavy; fiziko-khimicheskie osnovy proizvodstva, svoistva i oblasti primeneniia. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1962. 592 p. (MIRA 15:1)

(Ceramic metals)

ALFEROVA, N.S., doktor tekhn. nauk; BERNSHTEYN, M.L., kand. tekhn. nauk; BLANTER, M.Ye., doktor tekhn. nauk; BOKSHTEYN, S.Z., doktor tekhm.nauk; VINOGRAD, M.I., kand. tekhn.nauk; GAMOV, M.I., inzh.; CELLER, Yu.A., doktor tekhn. nauk; GOTLIB, L.I., kand. tekhn. nauk; GRDINA, Yu.V., doktor tekhn.nauk; GRIGOROVICH, V.K., kand. tekhn. nauk; GULXAYEV, B.B., doktor tekhn. nauk; DOVGALEVSKIY, Ya.M., kand. tekhn. nauk; DUDOVTSEV, P.A., kand. tekhn. nauk [deceased]; KIDIN, I.N., doktor tekhn. nauk; LEYKIN, I.M., kand. tekhn. nauk; LIVSHITS, B.G., doktor tekhn. nauk; LIVSHITS, L.S., kand.tekhn. nauk; L'VOV, M.A., kand. tekhn. nauk; MEYERSON, G.A., doktor tekhn. nauk; MINKEVICH, A.N., kand. tekhn. nauk; NATANSON, A.K., kand. tekhn. nauk; NAKHIMOV, A.M., inzh.; NAKHIMOV, D.M., kand. tekhn. nauk; OSTRIN, G.Ya., inzh.; PANASENKO, F.L., inzh.; SOLOLIKHIN, A.G., kand. tekhn.nauk; KHIMUSHIN, F.F., kand. tekhn. nauk; CHERNASHKIN, V.G., kand. tekhn. nauk; YUDIN, A.A., kand. fiz.mat. nauk; YANKOVSKIY, V.M., kand. tekhn. nauk; RAKHSHTADT, A.G., red.; GORDON, L.M., red. izd-va; VAYNSHTEYN, Ye.B., tekhn. (Continued on next card) red.

ALFEROVA, N.S.--- (continued) Card 2.

[Hetallography and the heat treatment of steel]Metallovedenie i termicheskaia obrabotka stali; spravochnik.

Izd.2., perer. i dop. Pod red. M.L.Bernshteina i A.G.

Rakhshtadta. Moskva, Metallurgizdat. Vol.2. 1962.

(KI.-A 15:10)

(Steel--Metallography)

(Steel--Heat treatment)

MEYERSON, G.A.

"Utudy of physicochemical conditions of sintered refractory compounds made from oxides of refractory metals."

The Sixth All-Union conference on Fowder Metallurgy Held at TITLE:

Moscow, 21 November 1962

SCURCE: Foroshkovaya met.llurgiya, no. 3, 1963. r. 110

THE PROPERTY OF THE PROPERTY O

MEYERSON, G.A.

Powder pressing process. Porosh.met. 2 no.5:3-14, 3-0 '62.

(MIRA 15:11)

1. Moskovskiy ordena Trudovogo Krasnogo Znameni institut stali i splavov.

(Powder metallurgy)

3/180/62/000/003/002/016 E111/E152

AUTHOR:

Meyerson, G.A. (Moscow)

TITLE:

Contribution to the theory of carbon reduction of

titanium dioxide

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo.

no.3, 1962, 33-37

TEXT: Multi-stage reduction of titania with carbon passing through several intermediate oxides and finally leading to the production of solid solutions (TiO-TiC) is described in terms of reaction kinetics. The author shows the incorrect results obtained in calculating the equilibrium conditions if no account is taken of lower oxides which are thermodynamically more stable than the higher oxides, or of solid solutions in which the affinity of metal towards oxygen increases substantially with falling oxygen concentration in the solid phase. It was found chiefly by the interpretation of the available data that the thermodynamic potential for the bond formation of Ti-O in the Card 1/2

Contribution to the theory of ... s/180/62/000/003/002/016

Ti-C-O solid solution increases by 30% approximately during the transition from TiO to TiC at 1000-1300 °C, as oxygen concentration decreases to a value of about 0.05%. It then approximates to the thermodynamic potential of formation of CaO. The equilibrium pressure of carbon monoxide, PCO, during a reaction between TiO and C at 1300 °C falls sharply from 25-30 atm to a pressure of the order of 10-2 atm. The Ti-O affinity in the Ti-C-O solid solution at low oxygen concentrations falls with rising temperature more slowly than that of Ca-O and becomes appreciably greater above 1500 °C. Data obtained in the course of the present investigation were used to provide an explanation of the low values of PCO which are required in practice to reduce TiO to TiC, and to demonstrate possible methods of thermodynamic calculations of processes of this type.

SUBMITTED: October 26, 1961

Card 2/2

MEXERSON, G.A.; SEGOFCHEANU, T. [Segorceanu, T.]

The affinity of hiobium for oxygen. Atom.energ. 13 no.6:597-599 D *62. (MIRA 15:12)

(Ghemical affinity) (Wiobium) (Oxygen)

\$/279/63/000/001/003/023 E111/E452

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TITLE:

Meyerson, G.A., Yakeshova, L.M., Shvedova, T.A. (Moscow)

Reduction of titanium and niobium oxides with calcium carbide and cyanamide

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i gornoye delo. no.1, 1963, 69-75

One way of processing materials containing oxides of highmelting metals is by a reduction-carbidization treatment to give carbides or carbonitrides. To ascertain how the very high temperatures normally required for carbon reduction could be lowered, the authors have investigated reduction of pure titanium and nichium oxides with calcium carbide and cyanamide. Their thermodynamic calculations and experiments showed that reduction is possible at temperatures of about 1000°C. In an atmosphere of nitrogen (or in an inert atmosphere when CaCN2 is used) almost theoretical yields of carbonitrides are obtained, i.e. total combined C and N approaches 50% atomic; with titanium the nitrogen content is, as a rule, several times greater than that of

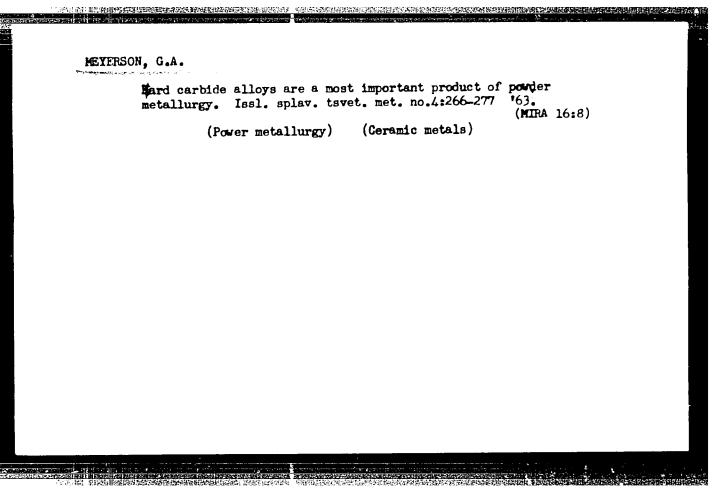
Reduction of titanium ...

S/279/63/000/001/003/023 E111/E452

combined carbon, while with niobium the nitrogen content is somewhat less than that of combined carbon. If the consumptions of CaCN2 or CaC2 are diminished, the carbon takes part in the reduction at 1000°C in addition to the calcium with formation of CO; in the titanium carbonitride obtained using 50% of the CaCN2 required for complete reduction by the Ca, the combined carbon content was only 0.6% by weight (1.5% atomic), the product approximating to nitride. With a diminished CaC2-consumption the results were less satisfactory than with CaCN2, probably owing to the lower stability of the carbide towards the water vapor and the CO formed; further work is needed on the use of reduced quantities of carbide. There are 2 figures and 5 tables.

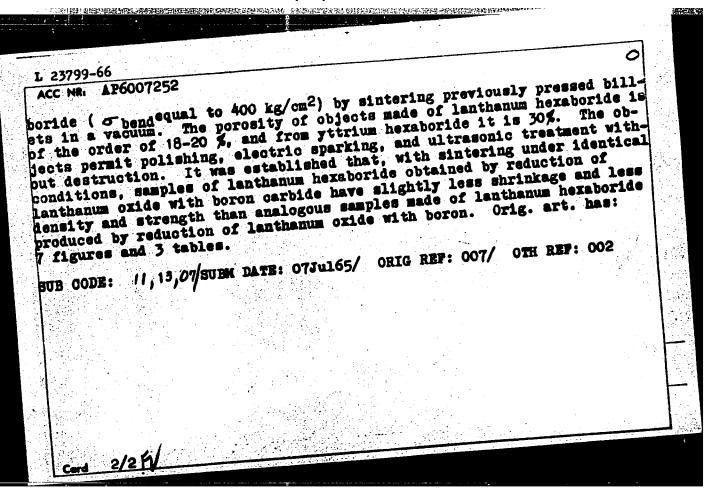
SUBMITTED: August 3, 1962

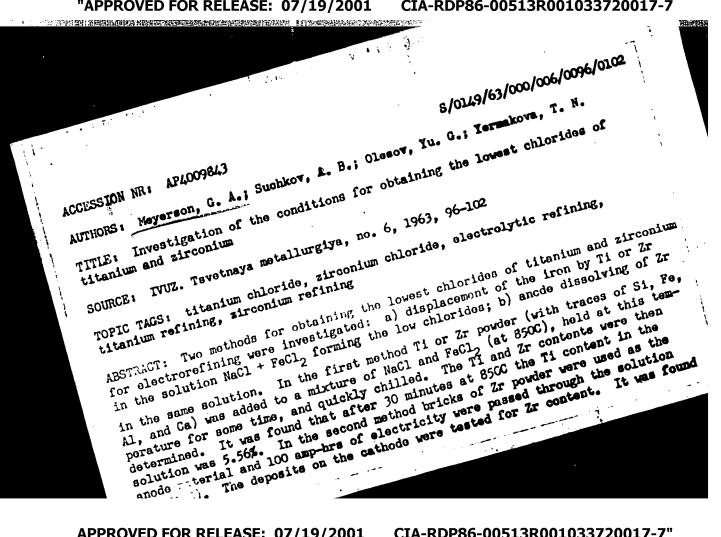
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<u>L 23799-66</u> EWP(+)/EWT(m)/ETC(f)/EWG(m)/EWP(t)/EWP(k) IJP(c) RDW/JD/JG ACC NR AP6007252 (A) UR/0363/66/002/002/0291/0298 AUTHOR: Meyerson, G.A.; Manelis, R.M.; Telyukova, T.M. 35 ORG: none Special characteristics in the production of objects from lanthanum and yttrium hexaborides by sintering in vacuum SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v.2, no.2, 1966, 291-298 TOPIC TAGS: boride, lanthanum compound, yttrium compound, powder metal ABSTRACT: Previous literature data indicate that objects made of lanthanum boride sintered in a hydrogen atmosphere have a porosity of up to 8%, and with sintering in vacuum not less than 30%. In the present work, the test samples were made of lanthanum boride and yttrium boride powders, whose chemical composition and physical properties are shown in a table. Results of the pressing operation on these powders are exhibited in a series of curves and tables, as well as in microphotographs. Contrary to previous published literature data, the article demonstrates the possbility of producing mechanically strong and sufficiently dense objects from lanthanum hexaboride (of bendequal to 960 kg/cm2) and yttrium hexa-Card 1/2 UDG: 546.654'271 + 546.641'271





ACCESSION NR: AP4009843

that the yield of the lower Zr chlorides was 43.7% at a cathode current of 4.5 amp/cm2 (for a pure NaCl electrolyte). Addition of FeCl2 to the electrolyte raised the yield to 86.9% at the same current. Orig. art. has: 7 tables and 2 figures.

ASSOCIATION: Moskovskiy institut stali i splavov. Kafedra metallurgii redkikh metallov i metallokeramiki (Moscow Institute of Steel and Alloys, Department of

SUBMITTED: 06Jun63

DATE ACQ: 07Feb64

ENCL: 00

SUB CODE: GC

NO REF SOV: 008

OTHER: 009

23

L-10252-63 EWF(q)/EWT(m)/BDS-AFFTC-LD ACCESSION NR: AP3002262 S/0089/63/014/006/0563/0568

AUTHOR: Meyerson, Q. A.; Olesov, Yu. G.; Pryalochnikov, V. I. 54

TITLE: Reduction of zirconium dioxide by calcium carbide or calcium cyanamide

SOURCE: Atomnaya energiya, v. 14, nol 6, 1963, 563-568

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TOPIC TAGS: zirconium dioxide, calcium carbide, calcium cyanamide, zirconium carbonitride, reduction, isobaric free-energy change

ABSTRACT: Zirconium carbide or carbonitride formation was shown to occur in the 900 to 1000 range when reduction of zirconium oxide is carried out with calcium carbide or calcium cyanamide in an inert atmosphere, while a temperature of over 20000 is required for conventional carbon reduction. Calculations of the isobaric change in the free energy of formation of the carbide and carbonitride indicated that the carbon in the calcium carbide or cyanamide may act simultaneously with calcium in the reduction of ZrO sub 2. Experimental reduction was carried out in a tubular electric furnace with a finely ground mixture of pure ZrO sub 2 and technical-grade calcium carbide or cyanamide in briquet form, in a

Card 1/85

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stationary nitrogen or argon atmosphere and in a nitrogen stream. The initial composition of a batch was calculated from reactions (1) and (2) or (3) and (4) (see Enclosure). After firing and cooling, the briquets were leached out with hydrochloric soid, and the products were analyzed for total and free carbon and for nitrogen. The percent conversion to zirconium carbonitride was evaluated on the assumption that the total combined C + N + O in carbonitride is 50 at%. The effects of temperature, retention time, and type of atmosphere upon the degree of conversion are presented in Figs. 1, 2, and 3 of Enclosure. It is concluded that 1) in a stationary nitrogen atmosphere, optimum conditions for complete conversion are 4 hr at 1100C with the amount of reducing agent 20% in excess of the theoretical; 2) the consumption of calcium cyanamide (but not of calcium carbide) can be lowered to 80% of theoretical consumption based on reaction (3) when a nitrogen stream is used; 3) reduction is feasible in any protective atmosphere (such as producer or natural gas), as shown by the experiments in an argon atmosphere. Orig. art. has: 5 figures, 3 tables, and 14 formulas.

ASSOCIATION: none

SUBCITED: 10Sep62

SUB CODE: OO

DATE ACQ: 12Jul63

NO REF SOV 003 OTHER

Card 2/\$-

ACCESSION NR: AP4019808

\$/0279/64/000/001/0067/0077

AUTHOR: Meyerson, G. A. (Moscow); Nisel'son, L. A. (Moscow); Chou, Ch'u-Ming (Moscow)

TITLE: Production of silicon carbide and its alloys with boron by reduction from the vapor phase over a heated surface

SOURCE: AN SSSR. Izv. Metallurgiya I gornoye delo, no. 1, 1964, 67-77

TOPIC TAGS: silicon carbide, silicon carbide production, silicon carbide alloy, boron containing alloy, boron containing silicon carbide alloy, vapor phase reduction, silicon tetrachloride reduction, silicon carbide crystallization

ABSTRACT: The authors discuss the existing literature on silicon carbide production, the growth of large, single, high-purity crystals, the α and β phases, the production of SiC from a vapor-gas mixture of SiCl_{μ}, toluene and hydrogen, etc. On calculating the changes in free energy for the formation of SiC from a mixture of SiCl_{μ} with some carbon-containing products in the presence and absence of hydrogen, they found that a substantial reduction of the isobaric potential accompanies the process when hydrogen is present; they conclude from their thermodynamic analysis that the initial materials must be carefully purified when high purity SiC is produced by deposition from a vapor-gas mixture over a heated surface. Their

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ACCESSION NR: AP4019808

experiments, carried out to study the physical and chemical conditions of deposition, employed a core of preliminarily carbidized tantalum wire on which pure SiCl, was deposited in a reactor (Illustrated) from carefully purified SICL, in the presence of electrolytically purified H₂ and toluene. Core temperature varied from 1400 to 2000C, the Si:C ratio in the initial vapor-gas mixture from 1 to 6, the rate of vapor-gas flow (normal atmospheric pressure, 25C) from 0.5 to 1.9 liters/min, and the amount of ${\rm H_2}$ from 7 to 11 times the stoichiometric proportion. Pure SiC depositing at 1600-1800C represented the β phase; the optimal Si:C ratio was found to be 3:1, the excess Si being required to prevent deposition of free graphite. Other experiments concerned alloying SiC with B (1600-1650C, vapor-gas flow about 1.0 liter/min at 25C, hydrogen excess 11 times the stoichiometric proportion) by combined deposition from SiCl4, C7Hg and BBr3. The Si:C ratio in the initial mixture was 3:1 and constant, the amount of B varied up to 9% in relation to SIC. The B content in the deposit corresponded to the B:C ratio in the vaporgas phase, and the microhardness of SiC was increased by addition of B. Various analyses of deposits with up to 8.5% B by weight indicated retention of a uniform solid-solution pattern of B substitution in the β -phase of SiC. An analysis of the kinetics of the SIC deposition process showed that the rate peaks at 1700-1800C, while its dependence on reagent concentration peaks around 2.5 g/liter (an 8-11 times excess of H2 is optimal); the rate increases with rising velocity Card 2/3

ACCESSION NR: AP4019808 of the vapor-gas flow and reaches about 0.4 g/cm2-hr at 1600C, 1.8 liters/min (25C) for a tubular reactor with a diameter of 50 mm. The yield drops to 65% in relation to C. Introduction of B slows the rate of deposition to some extent.
Orig. art. has: 2 tables, 7 graphs and 10 formulas.

ASSOCIATION: none

DATE ACQ: 31Mar64, SUBMITTED: 06Aug63

ENCL: 00

SUB CODE: ML, CH

NO REF SOV: 010

OTHER: 018

L 61032-65 EWP(e)/EWI(m)/EPF(n)-2/EWP(t)/EWP(k)/EWP(z)/EWP(b) Pf-4/Pu-4

ACCESSION NR: AR5017420 IJP(c) JD/JG UR/0137/65/000/006/G029/G029

SOURCE: Ref. zh. Metallurgiya, Abs. 6G198 53

AUTHOR: Meyerson, G. A.; Borok, B. A.; Lobashev, B. P.

TITLE: Investigation of a process for the hydrostatic pressing of metallic powders

CITED SOURCE: Tr. 7 Vses. nauchno-tekhn. konferentsii po poroshk. metallurgii. Verevan, 1964/9/106-121

TOPIC TAGS: powder metal compaction, titanium, copper, molybdenum, hydrostatic pressure, specific density, cold hardening, hardness? 1965

TRANSLATION: Hydrostatic pressing of titanium, copper, and molybdenum powders over a range of pressures from 3 to 68 kg/mm² was investigated. To depressure, p, the equation p/pmax was used, where pmax is the pressure constant. This equation describes hydrostatic pressing more accurately than the Card 1/2

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I	CCESSION NR: AR5017420
A	budrostatic pressing of copper powder, Pmax
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	ing is explained by the avalained not only by the about the particles. The
	cy of hydrostatic produced by
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"Investigations of some Lard allo,s in boron-silinon-parton s, stem." report presented at Inti Conf on Fowder Metailor), New York, in-this end of Steel & Ailo,s.

ACCESSION NR: AP5007603
AUTHOR: Heyersun, G. A. TITLE: Studies in the area of refractory and hard compounds TITLE: Studies in the area of refractory and hard compounds SOURCE: AN SSSR. Tzvestiya. Neorganicheskiye materialy, v. 1, no. 1, 1965, 16-28 SOURCE: AN SSSR. Tzvestiya. Neorganicheskiye materialy, v. 1, no. 1, 1965, 16-28
SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materiaty, TOPIC TAGS: carbide intride; haride allicide; sulfide, refractory material, re- fractory alloy, tungsten, itanium, zirconium, hafnium, vanadium, niobium, tantalum, molybdenum powder metallurgy 4 ABSTRACT: In a report presented to the June (1964) meeting of the Otdeleniye ABSTRACT: In a report presented to the June (1964) meeting of the Otdeleniye iziko-khimii i tekhnologii neorganicheskikh materialov AN SSSR (Physical chemistry and technology of inorganic materials department, AN SSSR), the author reviews and technology of inorganic materials department, AN SSSR), nitrides, borides, and technology of inorganic materials department, vanadium, nio- the trerature bearing on the present knowledge of the carbides, nitrides, borides, ailicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- ailicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- ailicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, titanium, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, zircorium, hatnium, vanadium, nio- nicides and sulfides of tingsten, zircorium, hatnium, zircorium, nio- nicides and sulfides of tingsten, z
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ACCESSION MR: AP5007603

these compounds in pure form with precisely known compositions. Orig. art. has: 6 figures, 1 table and 13 formulas.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow steel and alloys insti-

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L 35600-65 EPF(c)/EPR/EMA(c)/EWY(m)/ELET/b) (# (EMA(d) (EVET/w)/EME(-) ACCESSION NR: AP5007611 S/0363/65/001/001/0080/0087 AUTHOR: Meyerson, G. A.; Rakitskaya, Ye. M. TITLE: Research on the conditions for the production of the nitride and carbonitride of titanium from its dioxide SOURCE: AN JSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 1, 1965, TOPIC TAGS: titanium dioxide, titanium nitride, titanium carbonitride ABSTRACT: The production of the nitride and carbonitride of fitanium in demand because of their hardness and heat-, abrasion-, and corrosion-resistant properties, was studied from its dioxide. In particular, the authors studied the action of a stream of nitrogen and ammonia gas on titanium dioxide (production of nitride) and the reactions of a mixture of titanium dioxide and carbon in an atmosphere of ammonia and nitrogen (production of carbonitride) over various temperatures and periods of time. TiO2 in an atmosphere of ammonia at 1500C for 4 hours produced a nearly maximal amount of the nitride. A mixture of TiO2 + C produced a maximal

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amount of the carbonitride after 4 hours in nitrogen at 1700C, but after only 0.5-1 hour in ammonia at 1350C, and with a stronger N-C bond in the latter case. De-